
MEASUREMENT OF THE $^{107}\text{Ag}(\alpha,\gamma)$ CROSS SECTION

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Cross sections have been measured for the $^{107}\text{Ag}(\alpha,\gamma)^{111}\text{In}$ reaction at several energies between 8 and 12 MeV. This reaction is of interest because it can provide a check on calculations of low energy (α,γ) cross sections required for stellar nucleosynthesis predictions. Stacks of natural Ag foils of 1 micron thickness and 99.97% purity were bombarded with a $^4\text{He}^+$ beam from the LBNL 88" cyclotron. Following bombardment, the yields of the 151-keV and 245-keV photons produced in the 2.805 d electron-capture decay of the ^{111}In product nucleus were measured off-line. The Ag targets were interleaved with 99.6% purity, 6 micron thick natural Ti foils so that known cross sections for the $^{48}\text{Ti}(\alpha,n)^{51}\text{Cr}$ reaction could be used to check the accuracy of the beam current integration. For any given beam energy, beam energy degradation in the foils resulted in lower effective bombarding energies for successive foils in the stack, enabling measurements to be made for several energies per irradiation. The measured cross sections will be compared with published cross sections obtained from Hauser-Feshbach calculations.